

Appln. Serial No. 10/086,023
Amendment Dated October 17, 2005
Reply to Office Action Mailed August 18, 2005

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

- 1 1. (Previously Presented) A system for use in a well, comprising:
2 a plurality of wireless network devices in the well, the plurality of wireless network
3 devices in the well to communicate wirelessly using a protocol that defines
4 short-range wireless communication.

- 1 2. (Previously Presented) A system for use in a well, comprising:
2 a plurality of wireless network devices in the well, the plurality of wireless network
3 devices to communicate wirelessly using a Bluetooth wireless communication
4 protocol.

- 1 3. (Original) The system of claim 1, further comprising:
2 an interlink wireless network device positioned proximal the surface of the well;
3 a communication line interconnecting the interlink wireless network device to a surface
4 controller.

- 1 4. (Previously Presented) The system of claim 1, further comprising:
2 at least one of the wireless network devices communicating with a downhole device.

- 1 5. (Previously Presented) The system of claim 4, wherein the downhole device is selected
2 from gauges, sensors, valves, sampling devices, a device used in intelligent or smart well
3 completion, temperature sensors, pressure sensors, flow-control devices, flow rate
4 measurement devices, oil/water/gas ratio measurement devices, scale detectors, actuators,
5 locks, release mechanisms, equipment sensors, vibration sensors, sand detection sensors,
6 water detection sensors, data recorders, viscosity sensors, density sensors, bubble point
7 sensors, composition sensors, resistivity array devices and sensors, acoustic devices and
8 sensors, other telemetry devices, near infrared sensors, gamma ray detectors, H₂S
9 detectors, CO₂ detectors, downhole memory units, downhole controllers, perforating
10 devices, shape charges, firing heads, and locators.

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- 1 6. (Previously Presented) The system of claim 1, further comprising:
 - 2 at least one of the wireless network devices in communication with a power source.

- 1 7. (Original) The system of claim 6, wherein the power source is selected from a battery, a fuel cell, a downhole power generator, and a communication line extending to a surface of the well.

- 1 8. (Previously Presented) The system of claim 2, further comprising:
 - 2 at least one of the wireless network devices positioned in a lateral branch of a multilateral well.

- 1 9. (Previously Presented) The system of claim 2, wherein:
 - 2 a first of the wireless network devices is positioned in a lateral branch of a multilateral well;
 - 4 a second of the wireless network devices is positioned outside the lateral branch in another portion of the well;
 - 6 the first wireless network device and second wireless network device positioned within range of one another.

- 1 10. (Previously Presented) The system of claim 2, further comprising:
 - 2 a wireless network device in a wellhead of the well to communicate wirelessly with at least one of the wireless network devices in the well using the Bluetooth wireless communication protocol.

- 1 11. (Previously Presented) The system of claim 10, further comprising:
 - 2 a wireless network device outside the well adapted to communicate wirelessly with at least one of the wireless network devices in the wellhead.

- 1 12. – 13. (Cancelled)

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- 1 14. (Previously Presented) The system of claim 1, further comprising:
 - 2 a wireless network device outside the well adapted to communicate wirelessly with at
 - 3 least one of the wireless network devices in the well using the protocol.
- 1 15. (Cancelled)
- 1 16. (Previously Presented) The system of claim 2, further comprising at least one secondary
 - 2 communication system in communication with the at least one of the wireless network
 - 3 devices.
- 1 17. (Original) The system of claim 16, wherein the secondary communication system is
 - 2 selected from communication line, a fiber optic line, an Internet, a satellite, a telephone
 - 3 system, and an intranet.
- 1 18. (Original) The system of claim 16, wherein the at least one secondary communication
 - 2 system provides communication between the at least one wireless network device and a
 - 3 location selected from a remote land-based location and an offshore surface location.
- 1 19. (Previously Presented) The system of claim 2, wherein:
 - 2 a first one of the wireless network devices is positioned outside a casing in the well;
 - 3 a second one of the wireless network devices is positioned inside the casing of the well;
 - 4 the first wireless network device and the second wireless network device adapted to
 - 5 communicate wirelessly with one another.
- 1 20. (Original) The system of claim 19, further comprising:
 - 2 a memory device communicating with the first wireless network device.
- 1 21. (Original) The system of claim 19, wherein:
 - 2 the second wireless network device is mounted in the well.

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- 1 22. (Original) The system of claim 19, further comprising:
2 the second wireless network device is provided on a running tool.

- 1 23. (Previously Presented) The system of claim 1, wherein:
2 a first of the wireless network devices is positioned outside a tubing in the well;
3 a second of the wireless network devices is positioned inside the tubing of the well;
4 the first wireless network device and the second wireless network device adapted to
5 communicate wirelessly with one another.

- 1 24. (Original) The system of claim 23, further comprising:
2 a memory device communicating with the first wireless network device.

- 1 25. – 27. (Cancelled)

- 1 28. (Previously Presented) The system of claim 23, further comprising:
2 at least a portion of the tubing extends through a casing in the well;
3 a third of the wireless network devices positioned inside the casing of the well;
4 the first wireless network device, the second wireless network device, and the third
5 wireless network device are adapted to communicate wirelessly with one another.

- 1 29. (Original) The system of claim 28, wherein:
2 the first wireless network device relays information between the second wireless network
3 device and the third wireless network device.

- 1 30. – 32. (Cancelled)

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- 1 33. (Currently Amended) The system of claim 31, further comprising: A system comprising:
2 a tool having a first wireless network device, the tool movable in the well;
3 at least a second wireless network device in the well located at a predetermined position
4 therein;
5 a depth correlation circuitry in the tool in communication with the first wireless network
6 device in the tool to detect a signal from the first wireless network device for
7 determining the depth of the tool in the well, the signal from the first wireless
8 network device based on wireless communication between the first and second
9 wireless network devices; and
10 a third wireless network device in the well;
11 wherein the signal is based on triangulation among the first, second, and third wireless
12 network devices.

- 1 34. – 38. (Cancelled)

- 1 39. (Currently Amended) A method for use in a well, comprising:
2 providing plural wireless network devices in the well; and
3 the plural wireless network devices communicating wirelessly using a protocol that
4 defines short-range wireless communication.

- 1 40. (Previously Presented) A method for use in a well, comprising:
2 providing a plurality of wireless network devices in the well; and
3 the plurality of wireless network devices communicating wirelessly using a Bluetooth
4 wireless communication protocol.

- 1 41. (Previously Presented) The method of claim 39, further comprising:
2 communicating with a downhole device via at least one of the wireless network devices.

- 1 42. (Previously Presented) The method of claim 39, further comprising:
2 powering at least one of the wireless network devices with a downhole power source.

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- 1 43. (Previously Presented) The method of claim 40, further comprising:
2 telemetering data in a multilateral well using the wireless network devices.

- 1 44. (Previously Presented) The method of claim 39, further comprising:
2 telemetering data from the well to a position outside the well using at least one of the
3 wireless network devices.

- 1 45. (Previously Presented) The method of claim 40, further comprising:
2 telemetering data from through a casing using at least one of the wireless network
3 devices.

- 1 46. (Previously Presented) The method of claim 40, further comprising:
2 telemetering data from through a tubing using at least one of the wireless network
3 devices.

- 1 47. (Previously Presented) The method of claim 40, further comprising:
2 storing information downhole;
3 transferring the stored information to a running tool via at least one of the wireless
4 network devices.

- 1 48. (Previously Presented) The method of claim 47, further comprising:
2 determining the depth of a tool in the well using at least one of the wireless network
3 devices.

- 1 49. (Previously Presented) The method of claim 40, further comprising:
2 actuating a tool in the well using at least one of the wireless network devices.

- 1 50. (Cancelled)

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- 1 51. (Original) A system for use in a well, comprising:
 - 2 a first device positioned in the well;
 - 3 a second device remotely located with respect to the first device;
 - 4 means for transferring data between the first device and the second device using short-
 - 5 range wireless communication operating without the need for a central network.
- 1 52. (Previously Presented) A subsea networking system, comprising:
 - 2 a wireless network device positioned in a subsea structure;
 - 3 a subsea vehicle having a wireless network device therein that is adapted to communicate
 - 4 based on a radio frequency wireless protocol with the wireless network device
 - 5 positioned in the subsea structure.
- 1 53. (Previously Presented) The system of claim 52, wherein:
 - 2 the subsea structure is selected from a wellhead, a subsea processing device, a power
 - 3 generation device and a subsea monitor.
- 1 54. (Previously Presented) The system of claim 52, wherein:
 - 2 the subsea vehicle is selected from an ROV and a AUV.
- 1 55. (Previously Presented) A subsea telemetry system, comprising:
 - 2 a wireless network device positioned proximal the sea floor;
 - 3 a subsea vehicle having a wireless network device therein that is adapted to communicate
 - 4 based on a radio frequency wireless protocol with the wireless network device
 - 5 positioned proximal the sea floor.

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- 1 56. (Previously Presented) A subsea telemetry system, comprising:
2 a wireless network device positioned proximal the sea floor;
3 a subsea vehicle having a wireless network device therein that is adapted to communicate
4 with the wireless network device positioned proximal the sea floor; and
5 a guidance circuitry of the subsea vehicle in communication with the wireless network
6 device of the subsea vehicle, the guidance circuitry adapted to determine the
7 relative position of the subsea vehicle based upon input from the interconnected
8 wireless network device.
- 1 57. (Cancelled)
- 1 58. (Currently Amended) ~~The system of claim 57, A system for use in a well, comprising:~~
2 a tool containing a first wireless network device, the tool movable in the well during a
3 downhole operation;
4 a second wireless network device for location in the well,
5 wherein the first wireless network device is outside a wireless communication range of
6 the second wireless network device until the tool is moved into proximity of the
7 second wireless network device.
8 the second wireless network device to transmit a location code to the first wireless
9 network device.
- 1 59. (Currently Amended) The system of claim [[57]] 61, wherein the tool includes a depth
2 correlation device to correlate a position of the tool based on wireless communication
3 between the first and second wireless network devices.

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- 1 60. (Currently Amended) ~~The system of claim 57, further comprising~~ A system for use in a
2 well, comprising:
3 a tool containing a first wireless network device, the tool movable in the well during a
4 downhole operation;
5 a second wireless network device for location in the well,
6 wherein the first wireless network device is outside a wireless communication range of
7 the second wireless network device until the tool is moved into proximity of the
8 second wireless network device; and
9 at least another wireless network device for location in the well, the first wireless network
10 device to perform triangulation of signals to determine relative position of the tool
11 to the second wireless network device and the at least another wireless network
12 device.
- 1 61. (Currently Amended) ~~The system of claim 57, A system for use in a well, comprising:~~
2 a tool containing a first wireless network device, the tool movable in the well during a
3 downhole operation;
4 a second wireless network device for location in the well,
5 wherein the first wireless network device is outside a wireless communication range of
6 the second wireless network device until the tool is moved into proximity of the
7 second wireless network device.
8 the second wireless network device to send an actuating signal to the first wireless
9 network device for actuating the tool once the tool comes within range of the
10 second wireless network device.
- 1 62. (Previously Presented) The system of claim 61, wherein the tool comprises a perforating
2 gun, and the actuating signal comprises a firing signal to fire the perforating gun.
- 1 63. (Previously Presented) The system of claim 61, wherein the tool comprises a valve
2 actuated by the actuating signal.

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- 1 64. (Previously Presented) The system of claim 61, wherein the tool comprises a release mechanism that releases sensors from the tool in response to the actuation signal.
- 1 65. (Previously Presented) The system of claim 61, wherein the tool comprises a sampler to take a sample in response to the actuating signal.
- 1 66. (Previously Presented) The system of claim 61, wherein the tool comprises a recorder that starts recording in response to the actuating signal.
- 1 67. (Previously Presented) The system of claim 1, wherein the protocol comprises a Bluetooth protocol.
- 1 68. (Previously Presented) The method of claim 39, wherein communicating wirelessly using the protocol comprises communicating wirelessly using a Bluetooth protocol.
- 1 69. (Previously Presented) The system of claim 51, wherein the short-range wireless communication is according to a Bluetooth protocol.